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1993  
Spectrum  
Engineering (Firm)  
Gallatin Gateway  
Gravel Pit  
Project, DSL-AMRB  
No. 93-007

# **GALLATIN GATEWAY GRAVEL PIT PROJECT**

**DSL - AMRB No. 93-007**

## **FINAL REPORT**

**Gallatin County, Montana**



**November 22nd, 1993**

**SPECTRUM ENGINEERING**

**Billings, Montana**

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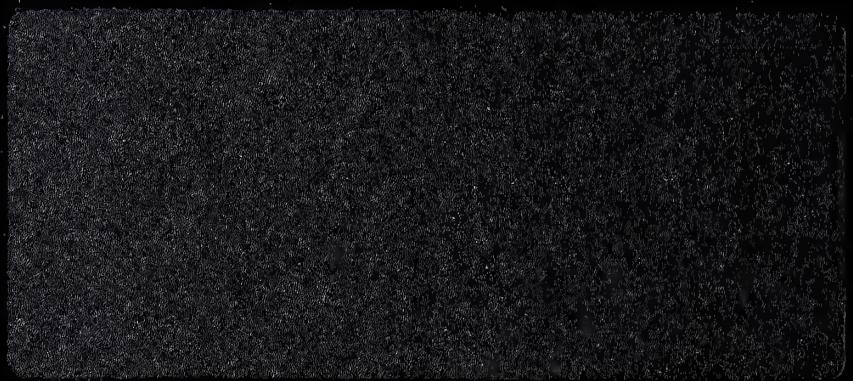


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**FINAL REPORT**

**GALLATIN GATEWAY  
GRAVEL PIT PROJECT**

**DSL - AMRB No. 93-007**



## RECENT WORK

NOV 24 1993

## STATE LANDS

## FINAL REPORT

# **GALLATIN GATEWAY GRAVEL PIT PROJECT DSL - AMBR No. 93-007**

DSL - AMRB No. 93-007

**Site Located in  
Section 2 of Township 3 South, Range 4 East  
Gallatin County, Montana**

STATE DOCUMENTS COLLECTION

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HELENA, MONTANA 59620

**November 22nd, 1993**

**Spectrum Engineering  
1413 4th Avenue North  
Billings, MT 59101**



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# GALLATIN GATEWAY GRAVEL PIT PROJECT

## 1. INTRODUCTION

### 1.1 Project Description

The Gallatin Gateway Reclamation Project is an abandoned sand and gravel pit located on the east side of State Highway 191 in Gallatin County one mile north of the town of Gallatin Gateway, Montana. The need for this project was to protect human health and safety caused by a dangerous highwall and seasonally ponded water which children use as a swimming hole. The work will consist of backfilling against the highwall slopes and filling in water-collecting low spots in the gravel pit floor, revegetating all disturbed areas, and planting trees.

The soils are dry. The vegetation is mostly annual grasses and forbs. The site has no structures and only a small amount of wood and metal debris. The fenced property boundary surrounding the pit encompasses approximately 6.5 acres with a highwall that extends 1650 feet with a maximum height of 30 to 35 feet.

#### 1.1.1 Location and Access

This site is located in the SW $\frac{1}{4}$ NE $\frac{1}{4}$  of Section 2, T3S, R4E, Gallatin County, Montana. The latitude is 45° 36.5' and the longitude is 111° 11.6'. The site is found on the 7 $\frac{1}{2}$  minute USGS quadrangle named Gallatin Gateway at an approximate surface elevation of 4900 feet.

It is 8 miles southwest of Bozeman, 1 mile north of Gallatin Gateway, and 4 $\frac{1}{2}$  miles south of Four Corners immediately east of paved State Highway 191 running north-south between Bozeman and West Yellowstone. The gravel pit is visible from the highway. Access to the site is also shown on the Site Plan Sheet 1 of 3.

#### 1.1.2 Land Ownership

Surface and mineral ownership of the site is 100% private as follows:

<u>3/4 interest</u>	<u>1/4 Interest</u>
Leonard & Violet Johnson 939 S. 79th Way Mesa, AZ 85208 602-984-5482	Glen C. Johnson P.O. Box 11414 Reno, NV 89570 702-825-3126

or at 77325 Gallatin Road  
Bozeman, MT 59715  
406-763-4223



## GALLATIN GATEWAY GRAVEL PIT PROJECT

### 1.1.3 History

There is no specific documentation as to the pit's date of establishment or reason for development. The landowner stated that he and his father obtained the property around 1943 and that there had been some sand and gravel removal on the property prior to their purchase of the site. State and county highway crews have removed small amounts for use on local roads from 1943 to present. The most significant removal of material occurred in the late 1950's. When the opencut mining laws were enacted, the site was exempted from permitting due to the small amount of material removed on a yearly basis. There has never been an active mining permit and no reclamation has ever previously been accomplished on the site.

### 1.2 Project Objectives/Site Problems

The project objective is to reclaim a very accessible, abandoned gravel pit. The site problems include steep highwalls and seasonally ponded water used by local children for swimming.

The crest of the highwall will not be reduced due to property constraints. All highwall fill material will come from within the pit. The current highwall slope is about 1H:1V to 1½H:1V with heights of up to 30 to 35 feet. After reclamation, the endwall (east side of pit) will be sloped at 3 horizontal to 1 vertical, western endwall will be sloped at 12H:1V, and the sidewalls (north and south sides of pit) will be sloped at 2½H:1V. The pit boundary encompasses 6.88 acres within the fence boundary. The reclamation will disturb 5.33 acres of the total.

The final pit will contain two benches. One bench will be at 4875 feet in elevation and the other at 4879 in elevation (based on the arbitrary elevation datum assigned at the time of surveying as shown by the pre-construction topography). The lowest spots in the pit floor will receive up to 5-6 feet of fill. The upper bench will be cut an average of 7 feet. The approximate configuration of the final reclamation is shown on the Post-Construction Topography view of the pit (Site Plan Sheet 1).

A total of 24,500 cubic yards of material will be cut to fill in the low spots and to backfill against the highwall. This is a balanced cut and fill within the pit boundaries with the majority of the cut coming from the western end of the pit and going to the eastern end of the pit. The pit is 700 feet long from east to west.

The existing trees and brush can be burnt and the limited debris (about 1 standard size pickup load) must be collected and disposed of at an approved disposal facility.

After all backfilling is completed the entire disturbed area will be revegetated (total of 5.33 acres). The two sidewalls (2½H:1V) will be broadcast seeded due to the steepness (at the drill seed rate) and tracked in with the dozer grousers. Then the sidewalls will be hydroseeded and mulched (at the drill seed rate). The floor of the pit (benches 4879



# **GALLATIN GATEWAY GRAVEL PIT PROJECT**

and 4875) and the two ends of the pit (the 12H:1V entrance slope and the 3H:1V endwall will be drill seeded, fertilized and mulched.

The final reclamation step will be to plant trees in random locations throughout the pit boundary. A total of 60 Plains Cottonwood (*Populus sargentii*) and 40 Golden Willow (*Salix alba, vitellina* variety) trees will be planted in the approximate location shown on the Site Plan Post-Construction Topography view of the pit.

This site is located 2500 feet (1/2 mile) east of the Gallatin River. The very nature of this project site prevents any runoff from leaving the site. The pit slopes inward on all four sides preventing any runoff from leaving the boundary of the pit. The fence surrounding the gravel pit serves as the construction limit boundary.

## **2. RESPONSIBLE PARTIES**

### **2.1 Contractor**

The successful low bidder was Hallett Reclamation. Their address is shown below:

Hallett Reclamation Company  
P.O. Box 169  
Livingston, Montana 59047  
Phone: 406/222-1446  
MT Contractor's License: 7789 A

### **2.2 Reclamation and Engineering Plan**

Spectrum Engineering was assigned the responsibility of preparing the reclamation and engineering specifications prior to contractor selection. Plans conforming to the general requirements were formulated in the field to meet specific conditions.

Spectrum's address is shown below:

Spectrum Engineering  
1413 4th Avenue North  
Billings, Montana 59101  
Phone: 406/259-2412

### **2.3 Quality Control Inspection**

Spectrum Engineering performed the quality control inspection. The project engineer was Bill Maehl and the construction inspector was Hank Lowe.



# GALLATIN GATEWAY GRAVEL PIT PROJECT

## 2.4 AMRB Coordination

The AMRB Project Manager was Jack Yates, Montana Department of State Lands, Abandoned Mine Reclamation Bureau.

## 3. CHRONOLOGICAL LISTING OF EVENTS

### 3.1 Pre-Bid Conference

The pre-bid conference was held on August 24th, 1993 at the gravel pit. Only one contractor showed up for the pre-bid conference.

### 3.2 Bid Date

The bid opening date was September 2nd, 1993.

### 3.3 Three Lowest Bids

There were 4 bidders on this project with bids ranging from \$26,518.00 to \$56,581.00. The engineer's estimate was \$55,794.00. The bid tabulations have been included in ATTACHMENT 1. The three lowest bidders are listed below.

Hallett Reclamation Livingston, Montana \$ 26,518.00	Baxter Construction Billings, Montana \$ 31,790.00	A.M. Welles, Inc. Norris, Montana \$ 32,824.00
--	--	--

### 3.4 Contract Award/Notice of Award/Notice to Proceed

The contract was awarded to the low bidder (Hallett Reclamation) after receiving all of their bonds, stormwater permit, and other required paper-work. The Agreement was signed by DSL on October 1st, 1993.

The Notice to Proceed was issued on October 4th, 1993. Hallett Reclamation performed all of the earthwork and tree planting. They subcontracted the revegetation to Bernie Jensen (Western Reclamation). The work started October 4th and was completed on November 9th. They used 37 of the 45 allowed calendar days to complete the work.

The prime contractors address is shown under 2.1 Contractor above.

### 3.5 Construction Start-up

The Contractor started mobilizing his equipment to the site on October 4th, 1993.



## **GALLATIN GATEWAY GRAVEL PIT PROJECT**

### **3.6 Change Orders**

There was one change order written for this project. A copy of this change order is included in this report as ATTACHMENT 2. The change order was for final quantities adjustment which added a total of \$1,047.92 to the contract price.

### **3.7 Work Stoppages**

There were no work shut-downs.

### **3.8 Requests for Payment**

There was one payment request on this project. Pay Request 1 was for the period from job start through job completion (November 9th). The amount completed for this pay request was \$ 27,565.92.

### **3.9 Substantial Completion**

The date of Substantial Completion was November 9th, 1993.

### **3.10 Final Completion and Approval**

The AMRB field inspection date was November 9th, 1993. The Final Completion date is one year from the Substantial Completion date or November 9th, 1994.

### **3.11 Final Payment**

Final payment was made to the Contractor in November, 1993. A copy of the one (final) payment request has been included in ATTACHMENT 3.

## **4. CONSTRUCTION**

### **4.1 Description of Project Plan**

The project plan was to reduce the slopes of a gravel pit by filling against the slopes with material from the upper bench within the pit and to fill in the low spots where water ponds up to 4 foot deep during surrounding field irrigation (July-August).



# GALLATIN GATEWAY GRAVEL PIT PROJECT

## 4.2 Major Equipment List

Type	Make/Model	Size/Horsepower	No. on Job
Track dozer	Caterpillar D-9G	350 hp	1
Paddle-wheel scraper	Caterpillar 613-B	11 cubic yard	1
Tractor	Homemade 4-Wheel Drive		1
Tractor	John Deere 2030		1
Spring tooth	6 foot		1
Crimper	7 foot		1
Hydroseeder	Custom built truck with tank		1
Mulch blower	Trailer mounted		1

## 4.3 Contractor Employees

The number of contractor employees on the job was usually 1 and sometimes 2 counting the Contractor himself.

## 4.4 Construction Activities

Hallett Reclamation moved their equipment to the site the day of the pre-construction meeting (October 4th). Following the pre-construction meeting, they began ripping the upper bench with the dozer and leveling the low spots and swales to allow the scraper to operate on a level surface. Bill Maehl and Hank Lowe set construction stakes.

Work progressed from October 4th to October 15th, 1993 with one operator alternately using the D9G dozer and the 613B scraper. The rental Cat 613B was down often for repairs. The slope grade was staked as needed. A second operator started October 15 on the 613B while D9G bulldozed the slopes.

On October 21, 1993 Jack Yates from the Department of State Lands stopped to inspect the job and verified everything looked good. Bill Maehl and Jack Yates were alerted as fill material grew short. The engineer decided to move the middle bench to the west which worked out well. This was necessary to account for the volume of material removed by the landowner immediately prior to construction and also the extra yardage (3,324 cubic yards) moved to save the existing trees and flatten the slopes to the extent possible.

On November 2, 1993 all bench and slope construction was completed. Hank Lowe fixed up the fence and gate so it could be easily closed after job completion. A lock and chain was also purchased for the gate.

On November 3, 1993 Western Reclamation broadcast the fertilizer. Due to their custom built, specialized equipment they were able to drill seed all the areas including the 2½H:1V slopes which was preferable to broadcasting and hydroseeding. On November 4, the site received 3/4 inch of snow overnight on the ground and it was still snowing



# GALLATIN GATEWAY GRAVEL PIT PROJECT

upon arrival at the site so mulching had to be delayed. Either hay mulch was put on and crimped or hydromulch was sprayed on all areas on November 8, 1993.

Randy NeSmith planted 41 Golden willow trees and 63 Plains cottonwood trees on November 9, 1993. Jack Yates arrived to complete the final inspection and stated everything was completed. The gate at the site was closed and locked and keys were left the landowners (Johnson's) mailbox across the road.

## 4.5 Quantities Used

No disputes were raised by the Contractor about the estimated quantities. The construction inspector's quantities matched the Contractor. The project was very straight-forward and provided little room for confusion or Contractor questions. The Contractor planted a few extra trees for nothing.

<u>Item</u>	<u>Amount</u>	<u>Unit Cost</u>
Provide Water	0. galons	\$ 44.00 / 1000 gallons
Unclassified Excavation	27,824. cubic yds	\$ 0.58 / cubic yard
Fertilize, Seed & Mulch	5.33 acres	\$ 1170.00 / acre
Furnish/Plant Cottonwood Trees	60. each	\$ 2.87 / each
Furnish/Plant Willow Trees	40. each	\$ 2.87 / each

## 5. PAYMENT REQUESTS

### 5.1 Pay Request

One pay requests was processed for this project as addressed under Section 3.8 above. A copy of this pay request has been included in ATTACHMENT 3.

### 5.2 Cost per Site

<u>Site Name</u>	<u>Disturbed Acres</u>	<u>Cost/Acre</u>	<u>Total Project Cost</u>
Gallatin Gateway Gravel Pit	5.33	\$ 5,171.84	\$ 27,565.92

### 5.3 Total Project Cost

The original bid was \$26,518.00 and one change order was issued for \$1,047.92 bringing the total construction cost to \$27,565.92. The total engineering cost for the project was \$ 28,401.05. An analysis of the engineering costs versus construction costs is presented in ATTACHMENT 4.



# GALLATIN GATEWAY GRAVEL PIT PROJECT

## 6. PROJECT SUMMARY

### 6.1 Summary of Project

The earthwork took from October 4 - November 2, 1993 to complete with 1 dozer and 1 paddle wheel scraper. Only one piece ran at one time for about half of the construction period. On November 3, Western Reclamation broadcast the fertilizer and drill seeded all the areas. Bernie Jensen was able to drill seed the 2½H:1V slopes so the contract specifications were modified from broadcast seeding on the steeper slopes to allow drill seeding (preferred method). Snow on November 4th, made the slope to slick to mulch. Mulching was delayed until November 8th, when the flatter slopes were hay mulched and crimped and the steeper slopes were hydromulched.

Hallett Reclamation planted 41 Golden willow trees and 63 Plains cottonwood trees on November 9, 1993. Jack Yates arrived to complete the final inspection and stated everything was completed. The gate at the site was closed and locked and keys were left in Johnson's mailbox at the road.

### 6.2 Site Condition after Completion

The work was completed per the construction plans. The entire site looked good. Hallett Reclamation, the Contractor, did a very good job on this project.

### 6.3 Maintenance or Follow-up

This site should require little or no maintenance work. The moisture conditions next spring and summer will dictate the reclamation success of the seed and the planted trees.

### 6.4 Bid Package (Construction) Drawings

The bid package contained three Site Plan sheets covering the work at this site. These are located in Attachment 5 at the back of the final report. These plans represent the reclamation engineering design (the plans from which the contractors bid the work).

### 6.5 As-Built Drawings

The original Site Plan sheets were modified to reflect as-built final reclamation construction. These are the same plans presented in Attachment 5 right before the photographs. Since this site was small, there was no need to present a complete set of pre- and post-construction drawings.



# **GALLATIN GATEWAY GRAVEL PIT PROJECT**

## **7. COMMENTS/SUGGESTIONS**

The only problem with this project was that the landowner continued to take gravel and topsoil material out of the pit (about 2000 cubic yards) after the engineering design and surveying was completed. Had there been a material dispute between the Engineer and the Contractor, it would have been impossible to resolve it with a new survey. Spectrum recommends that, in the future, the landowner be prevented from taking further material from a pit after a consent form is signed or that the additional money is budgeted to resurvey immediately prior to construction. If we had not gotten a good Contractor for this project, they could have asked for more money for the longer haul distance.

## **8. PHOTOGRAPHS/SLIDES**

### **8.1 Listing**

The description of the photographs taken to document the work performed is found at the back of the final report under ATTACHMENT 5. Each picture is numbered on the front and has a generic label on the back. Following the photo descriptions are the photographs themselves. The two bound final reports contain photographs and the unbound original report contains slides.

### **8.2 Photo Location Maps**

The location where the photos were taken and their orientation are shown on the as-built plan sheets located in ATTACHMENT 5 at the back of the report.

### **8.3 Photos/Slides**

The photographic documentation of the project includes both prints and slides.

A sequence of photographs documenting the construction activities begins immediately following the photo location maps found in ATTACHMENT 5 at the back of the report.



## **ATTACHMENT 1**

## **BID TABULATIONS**



GALLATIN GATEWAY GRAVEL PIT PROJECT  
GALLATIN COUNTY, MONTANA

DSL/AMRB 90-007  
September 2, 1993

BID TABULATIONS				ENGINEER'S ESTIMATE			HALLETT RECLAMATION			BAXTER CONSTRUCTION			A. M. WELLES, INC.	
Item Number	Estimated Quantity	Unit	Description		Unit Price			Total Price						
1.	1	LS	Mobilization		5,000.00		4,904.90	5,000.00		5,000.00		2,350.00		2,350.00
2.	20	KGAL	Provide Water		25		44.00	880.00		600.00		2.00		40.00
3.	24,500	CY	Unclassified Excavation (Backfilling and resloping)		1.60		.58	14,210.00		2,80		20,580.00		1.04
4.	5.33	Acre	Fertilize, Seed and Mulch		1800		9,594.00	1170.00		6,236.10		1000.00		5,330.00
5.	60	EA	Furnish and plant Plains Cottonwood Trees		15		900.00	2.87		172.20		2.80		168.00
6.	40	EA	Furnish and plant Golden Willow Trees		15		600.00	2.87		114.80		2.80		112.00
							55,794.00			26,518.00				31,790.00
														32,824.00

BID TABULATIONS				ENGINEER'S ESTIMATE			L. & M. CONSTRUCTION							
Item Number	Estimated Quantity	Unit	Description		Unit Price			Total Price						
1.	1	LS	Mobilization		5,000.00		600.00	600.00		600.00		0.00		0.00
2.	20	KGAL	Provide Water		25		500.00	37.50		750.00		0.00		0.00
3.	24,500	CY	Unclassified Excavation (Backfilling and resloping)		1.60		39,200.00	2.00		49,000.00		0.00		0.00
4.	5.33	Acre	Fertilize, Seed and Mulch		1800		9,594.00	700.00		3,731.00		0.00		0.00
5.	60	EA	Furnish and plant Plains Cottonwood Trees		15		900.00	25.00		1,500.00		0.00		0.00
6.	40	EA	Furnish and plant Golden Willow Trees		15		600.00	25.00		1,000.00		0.00		0.00
					55,794.00			56,581.00						0.00



## **ATTACHMENT 2**

## **CHANGE ORDERS**



# CHANGE ORDER

ORDER NO. 1

PROJECT TITLE: Gallatin Gateway Gravel Pit Project

MONT A/E or DSL-AMRB: 93-007

CONTRACT DATE: August 13th, 1993

OWNER: Department of State Lands, Abandoned Mine Reclamation Bureau

CONTRACTOR: Hallett Reclamation Company

Change Orders must be accompanied by an itemized cost breakdown. You are hereby requested to comply with the following changes from the Contract Documents. (Show separate costs for materials, labor, equipment, and miscellaneous. Show percent where applicable.)

ITEM NO.	DESCRIPTION OF CHANGES - ESTIMATED QUANTITIES & UNITS	COST OF CHANGES					TOTAL COST
		MAT'L'S.	LABOR	EQUIP.	MISC.	TOTAL UNIT COST	
2.	Provide Water (20 Kgal in bid package for dust suppression) - no water actually provided.					44.00	(880.00)
3.	Additional unclassified excavation (yardage) moved of 3,324 cubic yards					0.58	1,927.92
TOTAL COST - MATERIALS, LABOR, EQUIPMENT & MISC.						1,047.92	
OVERHEAD & PROFIT @ <u>      </u> %							INC.
GRAND TOTAL - THIS CHANGE ORDER						\$ 1,047.92	

Original Contract Price	\$ 26,518.00
Current Contract Price Adjusted by Previous Change Order	\$ 26,518.00
Cost this Change Order (+ or -)	+ \$ 1,047.92
New Contract Price including this Change Order	\$ 27,565.92

The completion date as set forth in the Contract Documents shall be (unchanged, increased, decreased) by 0 calendar days.

The date for completion of all work was 11/09/1993.

Description and Justification for Change:

2. Bid item 2 was to provide water for dust control. No water was required.
3. Bid item 3 was unclassified excavation of 24,500 cubic yards. In order to save the trees and make the slopes as gentle as possible, an additional 3,324 cubic yards were moved (verified by load count).

**SURETY CONSENT**

The Surety hereby consents to the aforementioned Contract Change Order and agrees that its bond or bonds shall apply and extend to the Contract as thereby modified or amended per this Change Order. The Principal and the Surety further agree that on or after execution of this consent, the penalty of the applicable Performance Bonds or Bonds is hereby increased by \$\_\_\_\_\_ (100% of the Change Order amount) and the penalty of the applicable Labor and Material Bond or Bonds is hereby increased by \$\_\_\_\_\_ (100% of the Change Order amount).

COUNTERSIGNED BY MONTANA  
RESIDENT AGENT

SURETY

By: \_\_\_\_\_

Seal

Recommended by: Spectrum Engineering \_\_\_\_\_  
Engineer \_\_\_\_\_ Date \_\_\_\_\_

Accepted by: Hallett Reclamation Company \_\_\_\_\_  
Contractor \_\_\_\_\_ Date \_\_\_\_\_

Approved by: \_\_\_\_\_  
Owner \_\_\_\_\_ Date \_\_\_\_\_

# **ATTACHMENT 3**

## **PAYMENT REQUESTS**



# PAYMENT REQUEST NO. 1 - FINAL

FROM 8/13/1993 TO 11/10/1993

PROJECT TITLE: GALLATIN GATEWAY GRAVEL PIT PROJECT

LOCATION: GALLATIN GATEWAY, GALLATIN COUNTY MONT A/E or DSL-AMRB: 93-007

NAME OF CONTRACTOR: HALLETT RECLAMATION COMPANY

ADDRESS: P.O. BOX 169, LIVINGSTON, MT 59047

## SUMMARY OF PROJECT STATUS

Amount of Original Contract \$ 26,518.00

Change Order No. 1 \$ 1,047.92

Change Order No. \$                   

Change Order No. \$                   

Amount of Approved Change Order(s) \$ 1,047.92

**TOTAL CONTRACT AMOUNT** \$ 27,565.92

Pay Request No.	Amount of Request
1	\$27,565.92

Total Contract Amount Completed to Date \$ 27,565.92

Less Retainage (0 %) \$ 0.00

**TOTAL AMOUNT EARNED TO DATE** \$ 27,565.92

Less Previous Payments \$ 0.00

**AMOUNT DUE THIS PAYMENT** \$ 27,565.92

Less 1% Tax \$ 275.66

**TOTAL DUE CONTRACTOR** \$ 27,290.26

I certify that this claim is correct and just in all respects and  
that payment or credit has not been received.

APPROVED BY:

DEPARTMENT OF STATE LANDS, ABANDONED

MINE RECLAMATION BUREAU

Owner

By \_\_\_\_\_

By \_\_\_\_\_

Date \_\_\_\_\_

Date \_\_\_\_\_

RECOMMENDED BY:

SPECTRUM ENGINEERING

Engineer

By \_\_\_\_\_

Date \_\_\_\_\_

Item No.	Description	Contract Quantity	Contract Unit Price	Previous Quantity Requested	Current Quantity Completed	Total Quantity Completed to Date	Total Contract Amount Completed to Date	Amount Due this Payment
1.	Mobilization	1 LS	4094.90	0	1	1	4,094.90	4,094.90
2.	Provide Water	20 Kgal	44.00	0	0	0	0.00	0.00
3.	Unclassified Excavation	24,500 Cubic Yards	0.58	0	27,824	27,824	16,137.92	16,137.92
4.	Fertilize, Seed and Mulch	5.33 Acres	1170.00	0	5.33	5.33	6,236.10	6,236.10
5.	Furnish and Plant Plains Cottonwood Trees	60 Each	2.87	0	60	60	172.20	172.20
6.	Furnish and Plant Golden Willow Trees	40 Each	2.87	0	40	40	114.80	114.80
	Materials on Site (Attach Schedule)	--	--	\$	\$	--	\$0.00	\$0.00
<b>TOTALS</b>						100%	\$27,565.92	\$25,565.92

## **ATTACHMENT 4**

### **ANALYSIS OF CONSULTANT COSTS INCURRED**



ANALYSIS OF CONSULTANT COSTS INCURRED  
FOR THE MONTANA DEPARTMENT OF STATE LANDS  
ABANDONED MINE RECLAMATION BUREAU

AMR PROJECT NUMBER: DSL-AMRB 93-007  
GALLATIN GATEWAY GRAVEL PIT PROJECT

DATE OF PREPARATION: NOVEMBER 22, 1993

ENGINEERING SERVICE	AMOUNT
DESIGN ENGINEERING:	\$ 11,559.85
CONSTRUCTION ENGINEERING AND PROJECT ADMINISTRATION COST:	16,841.20
TOTAL PROJECT ENGINEERING COST:	<u>\$ 28,401.05</u>

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CONSTRUCTION COST:	<u>\$ 27,565.92</u>
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PERCENTAGE ENGINEERING FEES TO CONSTRUCTION COST:

DESIGN ENGINEERING/CONSTRUCTION COST	41.94%
CONSTRUCTION ENGINEERING/CONSTRUCTION COST	61.09%
TOTAL PROJECT ENGINEERING COST/CONSTRUCTION COST	103.03%

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REMARKS: Services provided included landowner contact, public meeting attendance, surveying, basic engineering and reclamation design, bid document preparation, pre-bid and pre-construction meetings, construction staking, contract administration, quantity accounting, full time construction/reclamation inspection and final report preparation and project close-out.

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**ATTACHMENT 5**

**AS-BUILT DRAWINGS**

**AND**

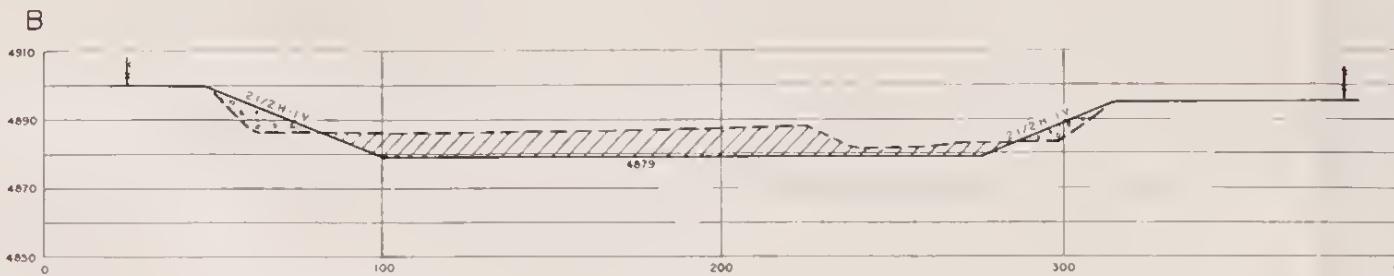
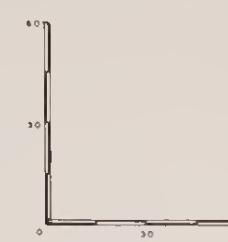
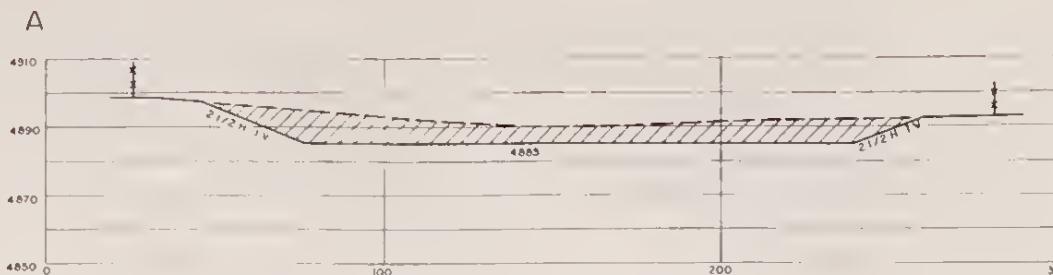
**PHOTO LOCATIONS**



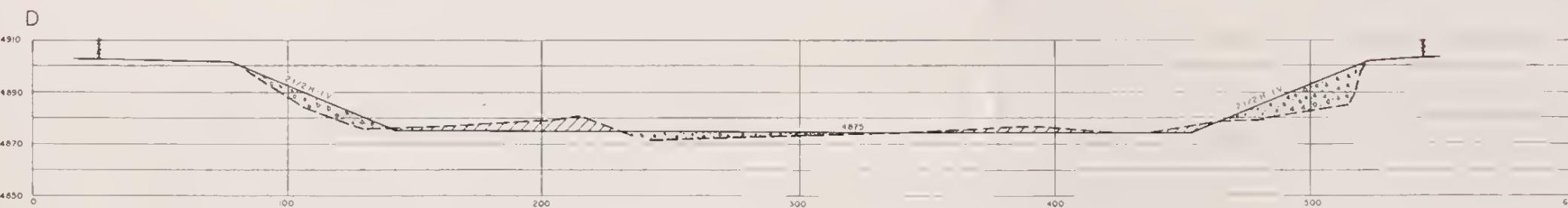
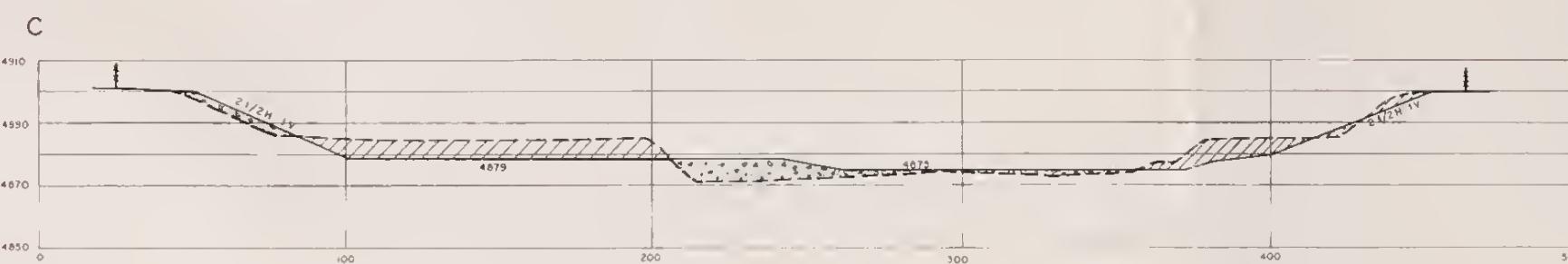




## CROSS SECTION SCALE



## HORIZONTAL AND VERTICAL



## LEGEND

|| Fence defining the property boundary (encircling the pit).  
 2 1/2H:1V Post-Construction highwall reduced from an average of 1H:1V to a final highwall configuration of 2 1/2 horizontal to 1 vertical on the sidewall and 3H:1V on the endwall with a 12H:1V maximum slope at the pit entrance.

Areas of fill.

//// Areas of cut.

ADDITIONAL INFORMATION PERTAINING TO THIS SITE MAY EXIST IN THE DEPARTMENT OF STATE LANDS' FILES OR AT SPECTRUM ENGINEERING'S OFFICE. THIS MATERIAL IS AVAILABLE FOR REVIEW BY ANY INTERESTED PARTY.

REDUCED PRINTS ARE APPROX. 1/2 ORIGINAL SCALE

## STORM WATER POLLUTION PREVENTION AND EROSION CONTROL PLAN BEST MANAGEMENT PRACTICES (BMP'S) FOR STORM WATER CONTROL

The Project Name is the Gallatin Gateway Gravel Pit Project.

The Owner is the Department of State Lands, Reclamation Division, Abandoned Mine Reclamation Bureau, 1625 11th Avenue, Helena, Montana 59620 at telephone 1-444-2074. The project manager is Jack Yale.

This site is located in the SW 1/4 NE 1/4 of Section 2, T3S, R4E, Gallatin County, Montana. It is 8 miles southwest of Bozeman, 1 mile north of Gallatin Gateway, and 4 1/2 miles south of Four Corners immediately east of paved State Highway 191 running north-south between Bozeman and West Yellowstone.

The construction activity is described in the Work Description. The reclamation construction is estimated to disturb and reclaim 5.33 acres during this project. The purpose of this project is to reclaim an abandoned gravel pit with steep highwalls and ponded water (seasonal). The construction activity will include reducing the highwall slopes by backfilling against them; filling in holes in the pit floor, and providing water for dust control.

The estimated construction time period will be forty days from the start of on-site reclamation until final vegetation is completed and the Contractor demobilizes.

This site is located 2500 feet (1/2 mile) east of the Gallatin River. The very nature of this project site prevents any runoff from leaving the site. The pit slopes inward on all four sides preventing any runoff from leaving the boundary of the pit. Best Management Practices (BMP's) during construction to control sediment and erosion in storm runoff include: temporary stabilization practices - mulching for erosion control, and permanent stabilization practices - seeding and fertilizing (100% revegetation of the site) and tree planting in selected areas.

Good housekeeping for petroleum products, wastes, fertilizer and off-site tracking will be followed by the Contractor as outlined in MPDES Stormwater Discharge Permit and Erosion Control Plan. Good housekeeping chores will include as a minimum:

- 1 To prevent tracking of sediment off-site, prior to leaving the site, all vehicles shall be washed down on-site as determined by the Engineer at such a location as to contain all washed sediment on-site.
- 2 Fuel, oil, grease and other such materials shall be stored in one location in such a manner as to prevent spillage and prevent contamination of the surrounding soil. All materials shall be stored in a bermed plastic lined storage area with a capacity of 110 percent of the largest container. Absorbent material shall be available on-site for clean up of any spills, and,
- 3 Fertilizer shall be stored on pallets off the ground or on plastic ground covers and covered with plastic or in other such manner as to prevent spillage and washing from rain water or wind into surrounding soil.

SITE PLAN AND GENERAL LAYOUT	
GALLATIN GATEWAY GRAVEL PIT	
T3S, R4E, NE 1/4 OF SECTION 2 GALLATIN COUNTY, MONTANA	
STATE OF MONTANA, DEPARTMENT OF STATE LANDS ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION 1625 Eleventh Avenue, Helena, Montana 59620	
DATE	7/93
DRAWN BY	RMS
APPROVED BY	WM
REVISIONS	NO. DATE BY
SPECTRUM ENGINEERING Mining and Civil Engineers 1413 4th Avenue North Billings, Montana 59101 Phone: 406-259-2412	
SHEET NO. 2 of 3	





PHOTO 1

Looking northwest towards the highway. The endwall is on the right and the southern sidewall is on the left of the photo. The lower proposed bench (at 4875' elev.) is in the center between the endwall and southern sidewall. The maximum fill on this bench is just over 5 feet and the maximum cut within this bench is about 7 feet.



PHOTO 2

Looking north at the 2 current benches. The two proposed benches (4879 and 4875 elev.) can also be seen.



PHOTO 3

Looking south-southwest across the gravel pit. The lower bench is on the left and the upper bench is on the right of the photo.



PHOTO 4

Looking southwest across the pit. The northern sidewall is on the right. The endwall is on the left and the southern sidewall is in the middle of the picture.



PHOTO 5

Looking east-southeast into the pit from the slight hill on the northern side of the pit at the entrance. The proposed entrance slope is on the right of this photo. This will be cut at a 12H:1V until it intersect the new 4879 foot bench elevation. This upper bench will require from 7 to 9 feet of cut.

NOTE FOR ALL PHOTOS

The current crest of the highwall will not be reduced due to property constraints. All highwall reduction will be as a result of backfilling against the highwall. The majority of the fill material will come from cutting the upper bench to a lower elevation, and from removing the slight knob or hill on the north as you enter the pit.

SITE PLAN AND GENERAL LAYOUT  
GALLATIN GATEWAY  
GRAVEL PIT

T3S, R4E, NE 1/4, OF SECTION 2  
GALLATIN COUNTY, MONTANA

STATE OF MONTANA, DEPARTMENT OF STATE LANDS  
ABANDONED MINE RECLAMATION BUREAU, RECLAMATION DIVISION  
1625 Eleventh Avenue, Helena, Montana 59620

DATE 7/93  
DRAWN BY RMS  
APPROVED BY WM  
NO. 1413 4th Avenue North  
Billings, Montana 59101  
Phone 406-259-2412  
REVISIONS  
SHEET NO. 3 of 3

SPECTRUM ENGINEERING  
Mining and Civil Engineers



## GALLATIN GATEWAY GRAVEL PIT PROJECT PHOTO DESCRIPTIONS

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
<b>EQUIPMENT USED</b>		
1	10-04-93	Cat D-9G dozer.
2	10-04-93	Cat 613B scraper-rental unit.
3	11-03-93	Western Reclamation (Bernie Jensen) pickup, trailer, and tractor.
4	11-03-93	Western Reclamation (Bernie Jensen) fuel tank.
5	11-03-93	Spring tooth plow.
6	11-03-93	John Deere 2030 tractor.
7	11-03-93	Calculating seed for drilling.
8	11-08-93	Hay mulch blower and John Deere tractor.
9	11-08-93	Hydro-seeding truck.
<b>DIFFERENT VIEWS OF THE PIT AT VARIOUS STAGES OF COMPLETION</b>		
10	06-01-93	Pre-construction panorama looking northeast.
11	06-01-93	Pre-construction panorama looking north.
12	10-22-93	Cat D-9G on northeast slope.
13	10-27-93	Slope on northeast corner.
14	10-28-93	Original tree area saved by contractor.
15	10-28-93	North half of east end being graded.
16	11-02-93	North half of gravel pit looking west after grading.
17	11-03-93	John Deere tractor/spring tooth working up lower bench.
18	11-09-93	Planting cottonwood trees.
19	11-09-93	Planting willow trees.
20	11-09-93	Planted willow trees and revegetation in place.
21	11-08-93	Crimped hay mulch.
22	06-01-93	Pre-construction of north half of pit.



**GALLATIN GATEWAY GRAVEL PIT PROJECT  
PHOTO DESCRIPTIONS**

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
23	10-15-93	Cat D-9G on northwest corner.
24	11-02-93	Cat 613B leveling middle bench.
25	11-02-93	Top bench finished grade.
26	11-02-93	Finished grade on 12H:1V slope entering pit.
27	10-15-93	Cat 613B hauling from northwest end.
28	11-03-93	Drill seeding north side 2½H:1V slope.
29	11-03-93	John Deere tractor & spring tooth on east end of 3H:1V slope.
30	11-09-93	Upper bench completed adjacent to highway.
31	06-01-93	Pre-construction of south side of pit.
32	10-07-93	Cutting slope and south side with Cat D-9G.
33	10-08-93	Site after 5 days of work.
34	10-15-93	Site after 10 days of work.
35	10-22-93	Site after 15 days of work.
36	10-29-93	Site after 19 days of work.
37	11-02-93	South slope finished grade.
38	11-02-93	South half of gravel pit looking east.
39	11-03-93	Drill seeding on south side 2½H:1V slope.
40	11-08-93	Hydromulch on south slope.
41	06-01-93	Pre-construction of northeast corner.
42	10-08-93	Site after 5 days of work.
43	10-15-93	Site after 10 days of work.
44	10-22-93	Site after 15 days of work.
45	10-21-93	Leveling lower bench.
46	10-29-93	Site after 19 days of work.
47	10-27-93	Cat 613B hauling to east end slope.

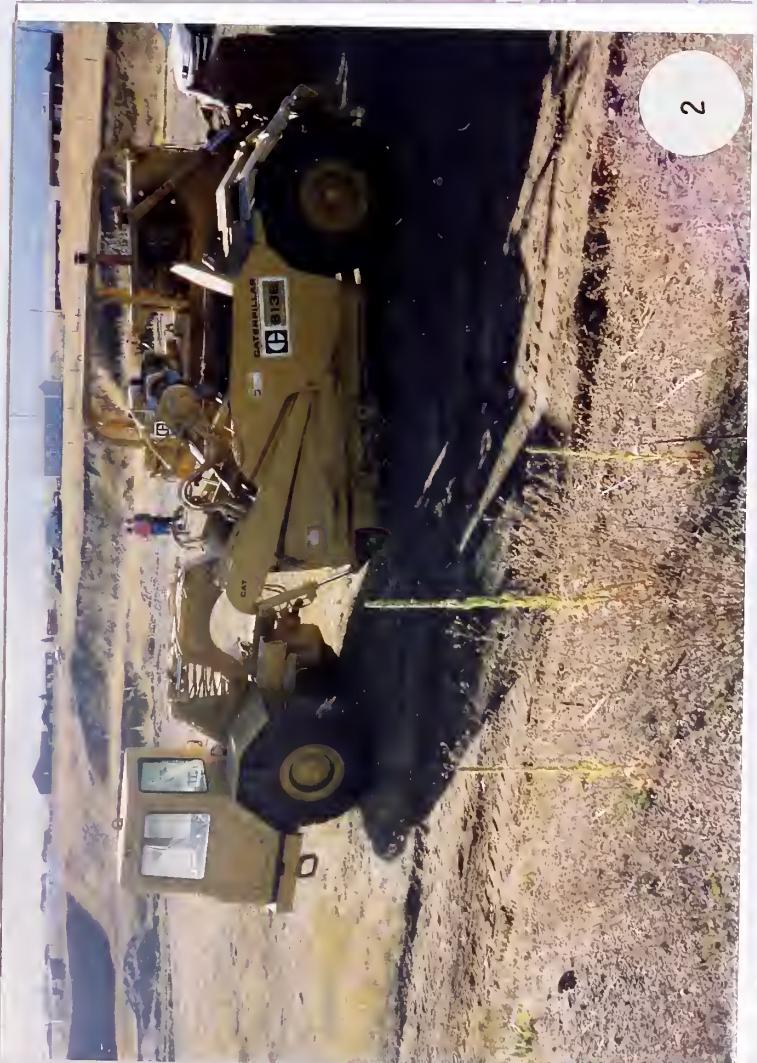


**GALLATIN GATEWAY GRAVEL PIT PROJECT  
PHOTO DESCRIPTIONS**

<u>ASSIGNED NUMBER</u>	<u>DATE TAKEN</u>	<u>SUBJECT OR COMMENTS</u>
48	10-28-93	South half of east end looking to the south.
49	11-02-93	North half of east end finished grade.
50	11-02-93	South half of lower bench finished grade.
51	11-02-93	South half of east end finished grade.
52	11-08-93	Blowing hay mulch on east end.
53	11-08-93	Crimping hay mulch on east end.
54	11-09-93	South half complete.
55	06-01-93	Pre-construction of northeast corner.
56	10-08-93	Site after 5 days of work.
57	10-15-93	Site after 10 days of work.
58	10-22-93	Site after 15 days of work.
59	10-29-93	Site after 19 days of work.
60	11-02-93	North slope finished grade.
61	11-02-93	Middle bench finished grade.
62	11-02-93	North half of gravel pit looking east.
63	11-08-93	Applying hydromulch on the north side.
64	11-08-93	Hydromulch on north slope.
65	11-08-93	Ton of hay mulch on truck.
66	11-09-93	North half revegetation completed.
67	11-09-93	Gate closed, locked and chained. Project complete.



# EQUIPMENT







6



8

Roll III  
# 11

**GALLATIN GATEWAY GRAVEL PIT PROJECT**

DSL-AMRB 93-007

T3S, R4E, Section 2 in Gallatin County  
Gallatin Gateway USGS 7½' quadrangle

Before, during and after construction  
photographs. Photo descriptions are  
found in the final report.

Construction period: 10/4/93-11/9/93

Roll III  
# 10

**GALLATIN GATEWAY GRAVEL PIT PROJECT**

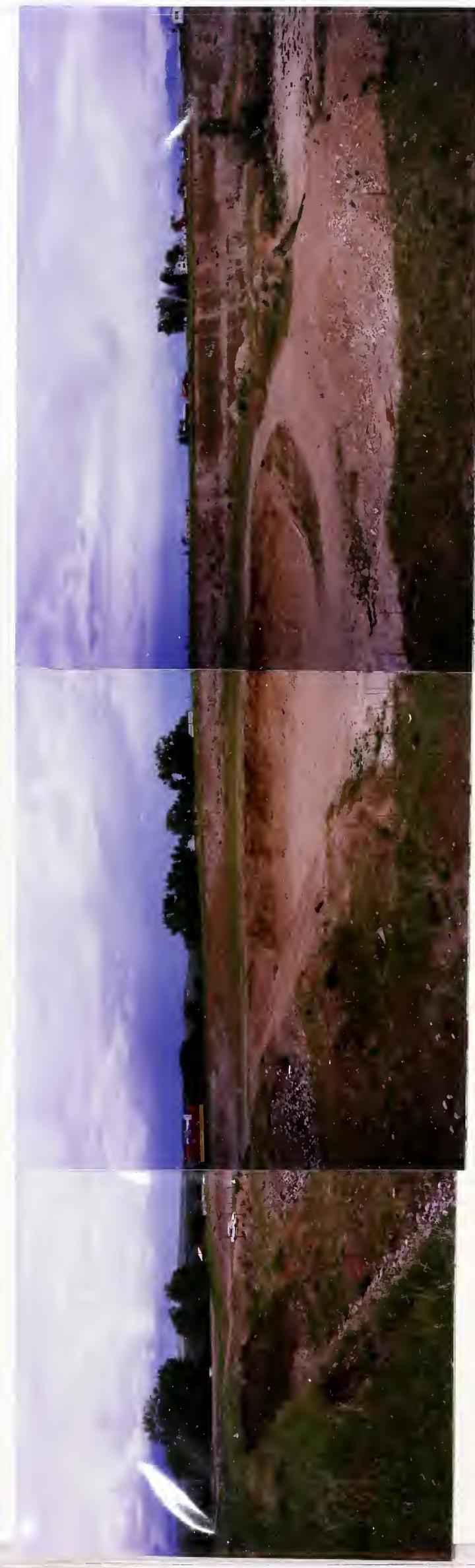
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# DIFFERENT VIEWS OF THE PIT AT VARIOUS STAGES OF COMPLETION

12



14



13



**GALLATIN GATEWAY GRAVEL PIT PROJECT**

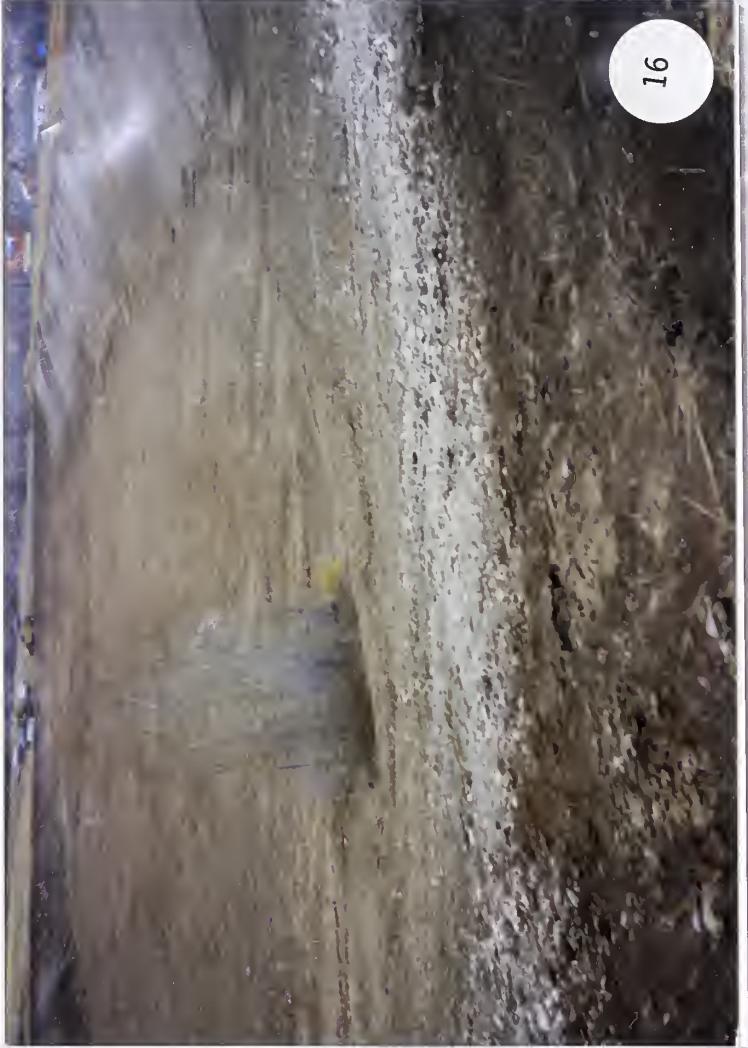
DSL-AMRB 93-007

T3S, R4E, Section 2 in Gallatin County  
about 1 mile north of Gallatin Gateway.  
Gallatin Gateway USGS  $7\frac{1}{2}'$  quadrangle

Before, during and after construction  
photographs. Photo descriptions are  
found in the final report.

Construction period: 10/4/93-11/9/93

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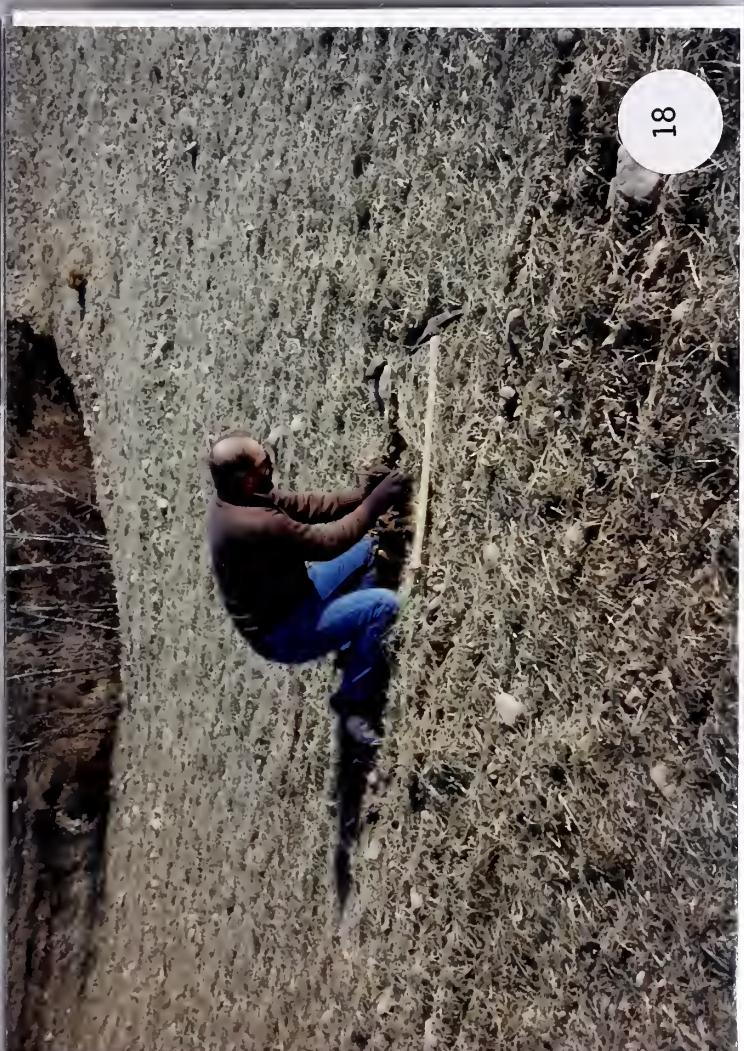




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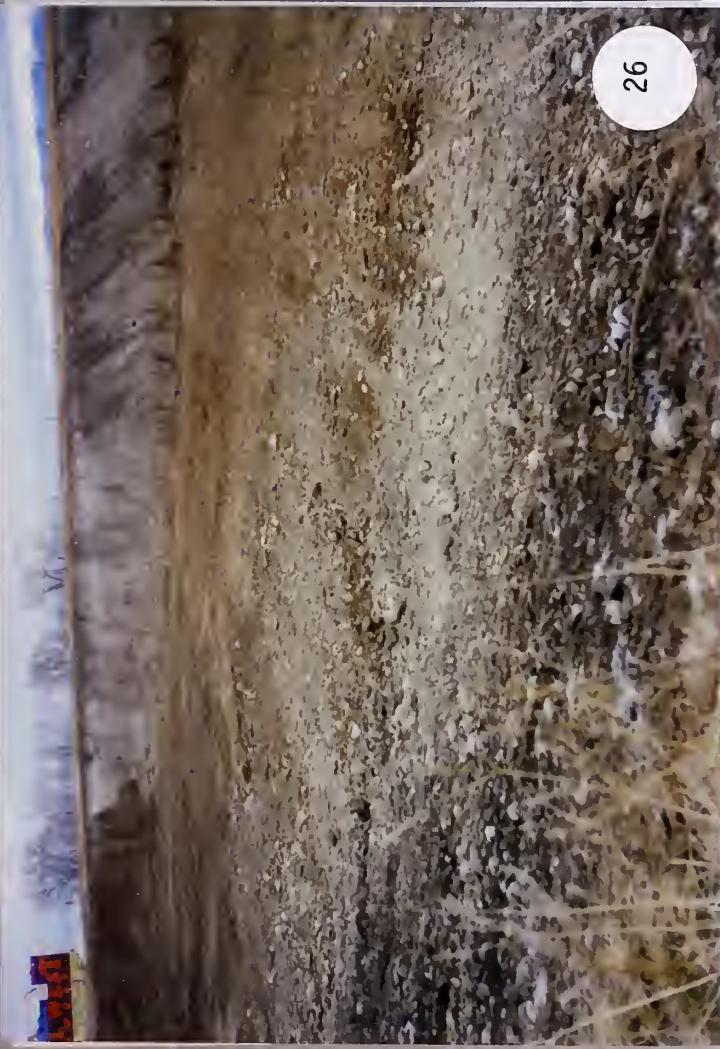
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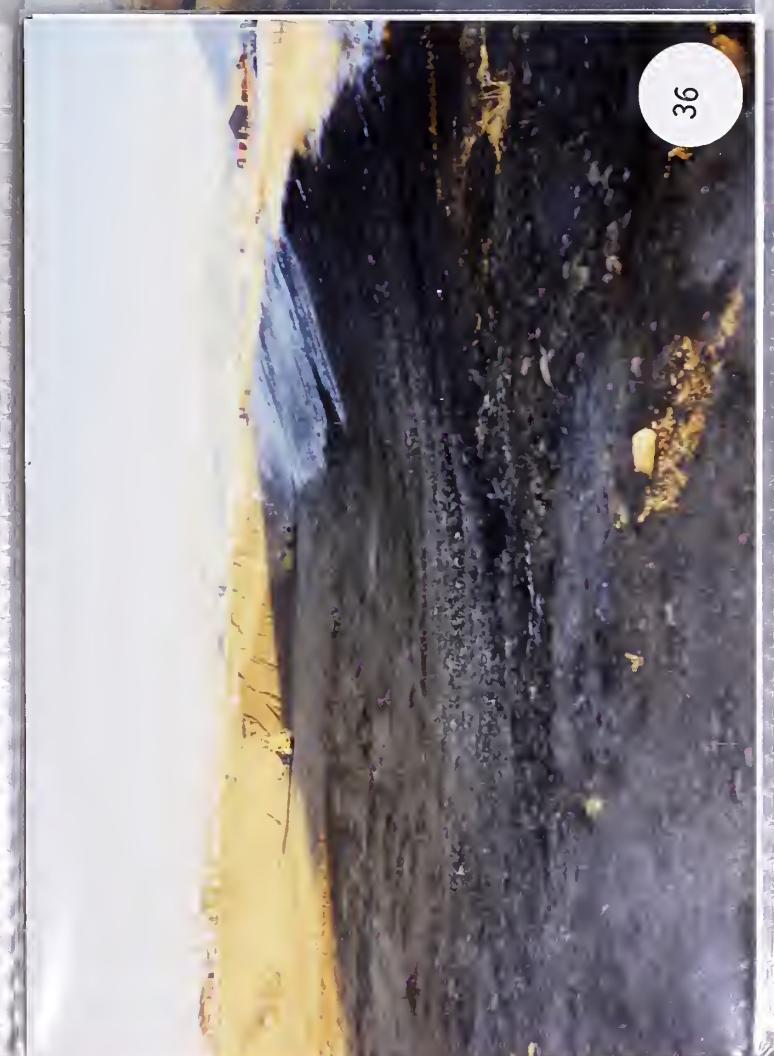
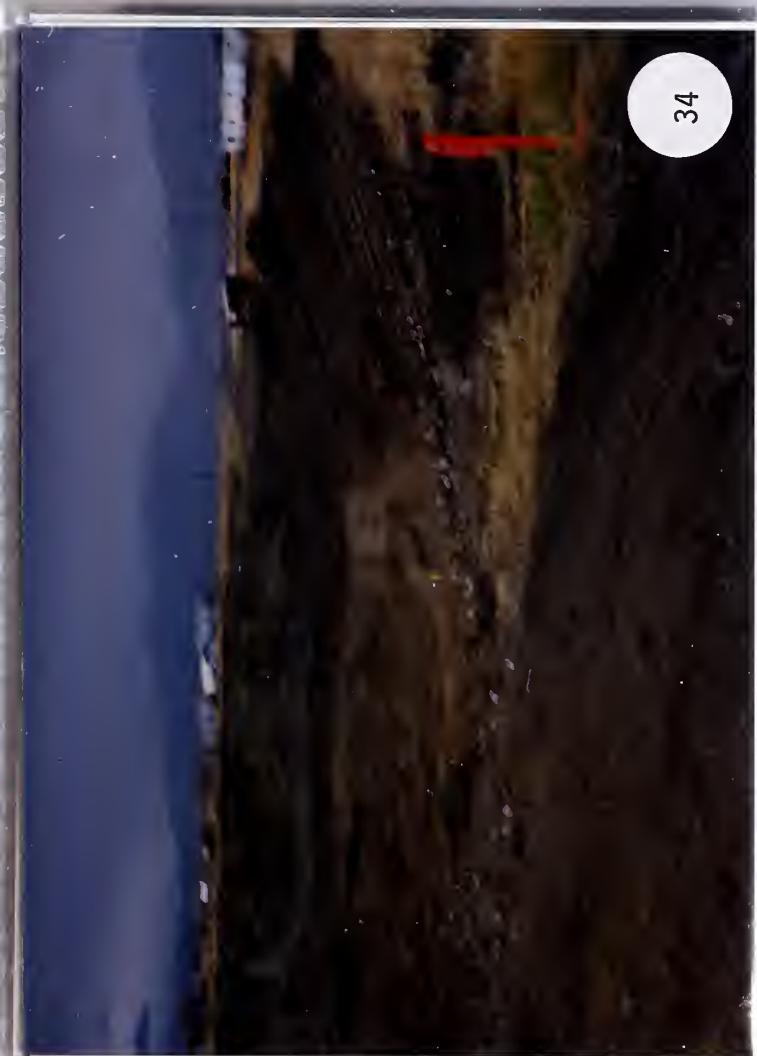
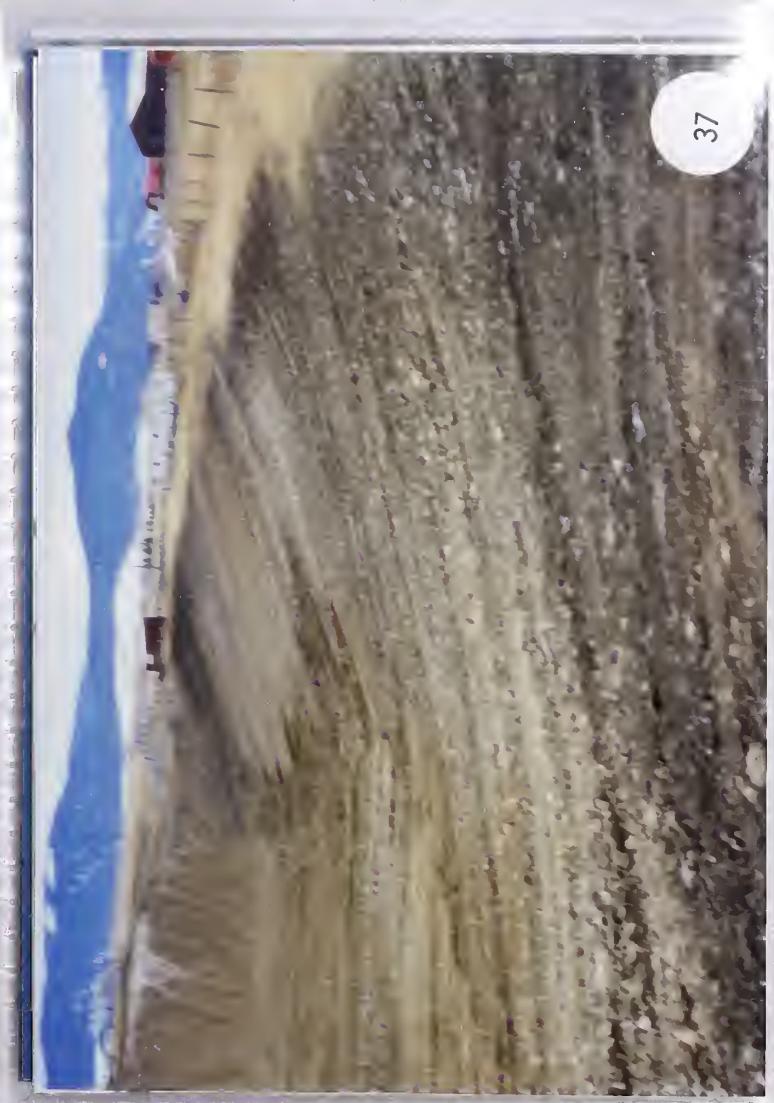
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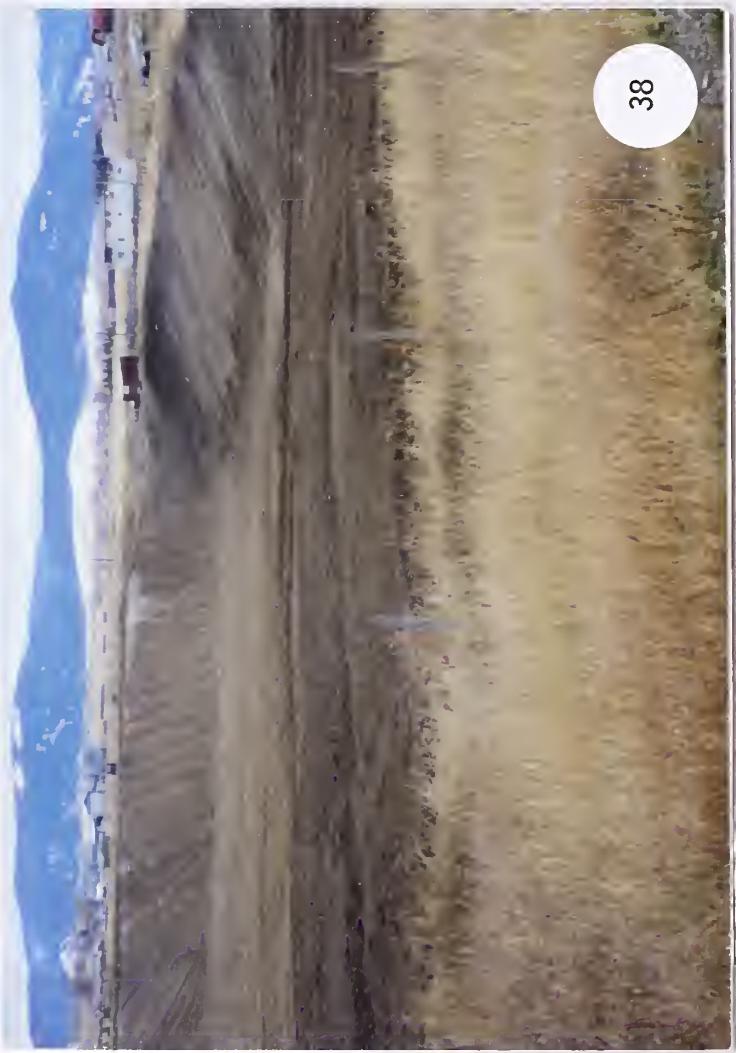


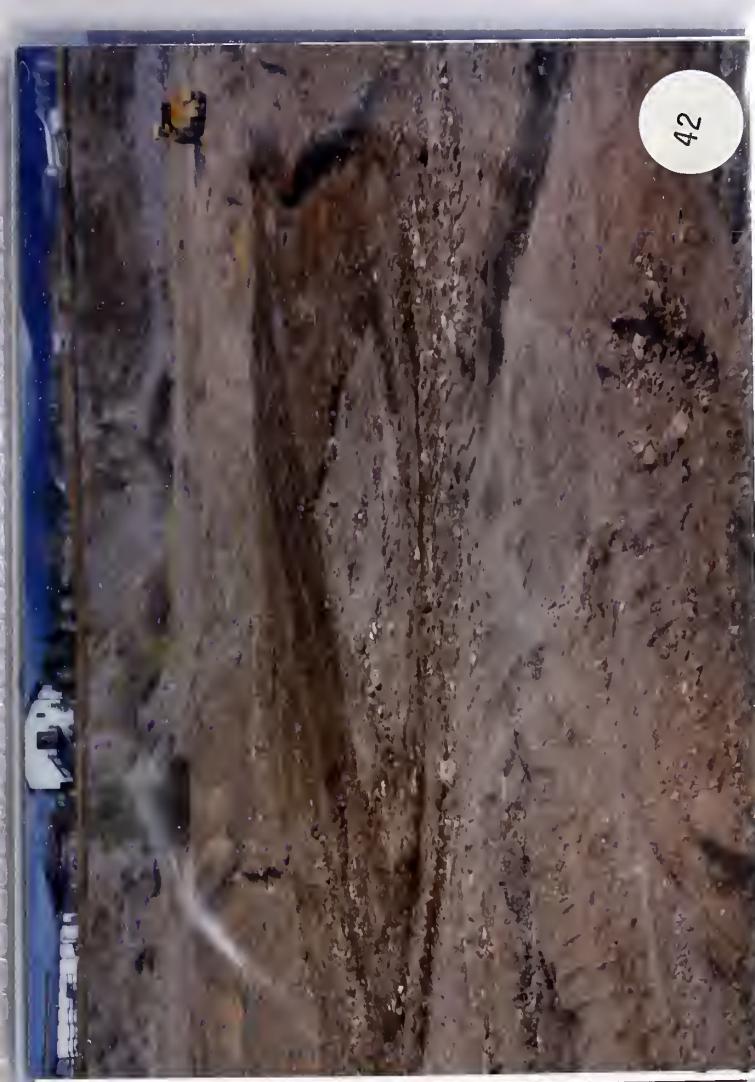
**GALLATIN GATEWAY GRAVEL PIT PROJECT**

DSL-AMRB 93-007

T3S, R4E, Section 2 in Gallatin County  
Gallatin Gateway USGS  $7\frac{1}{2}'$  quadrangle

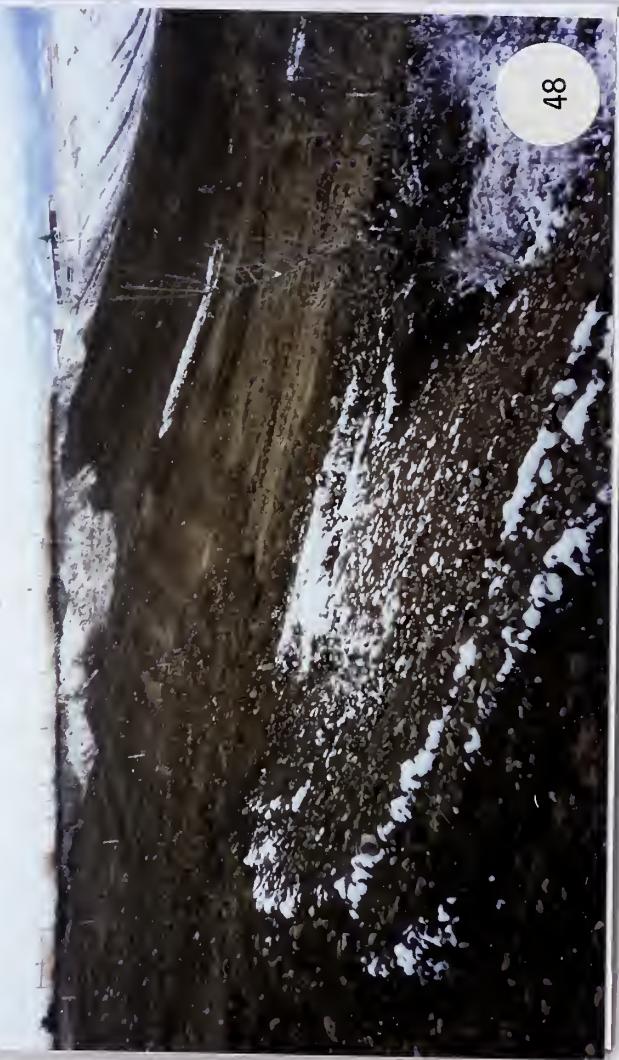
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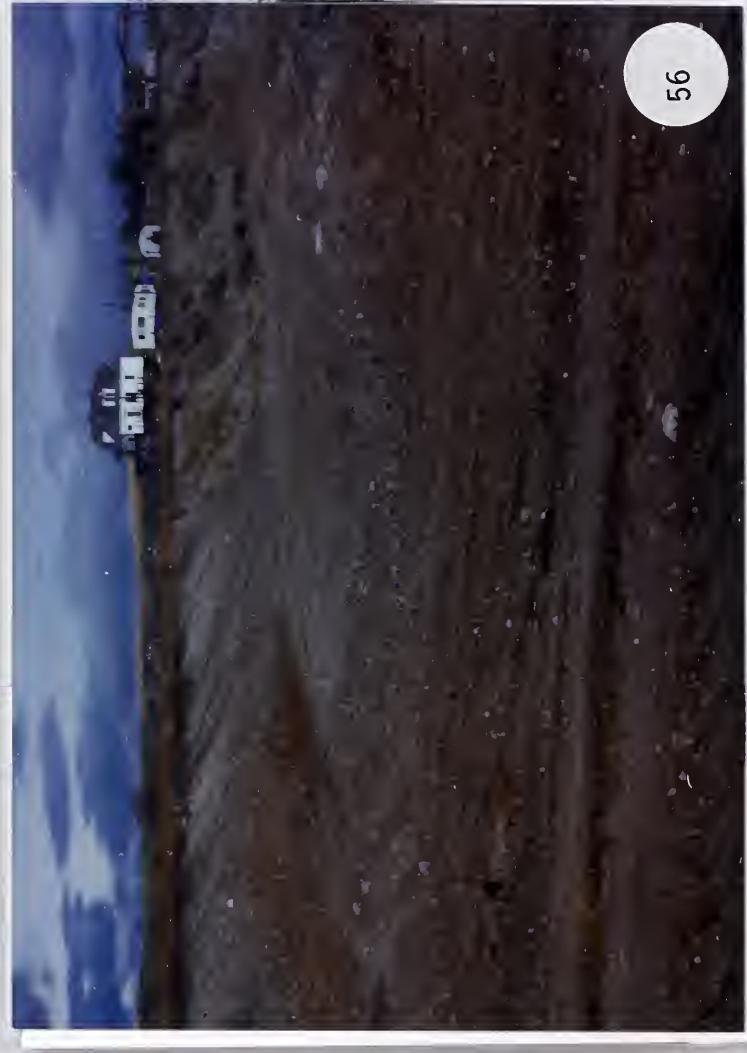
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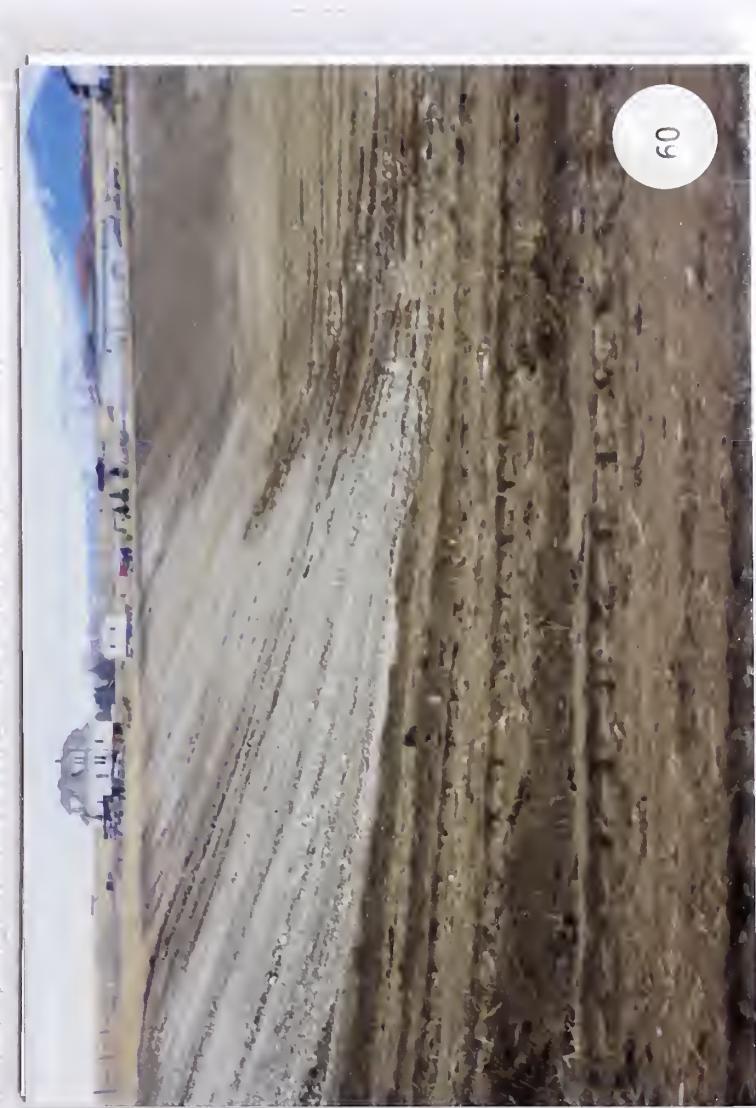


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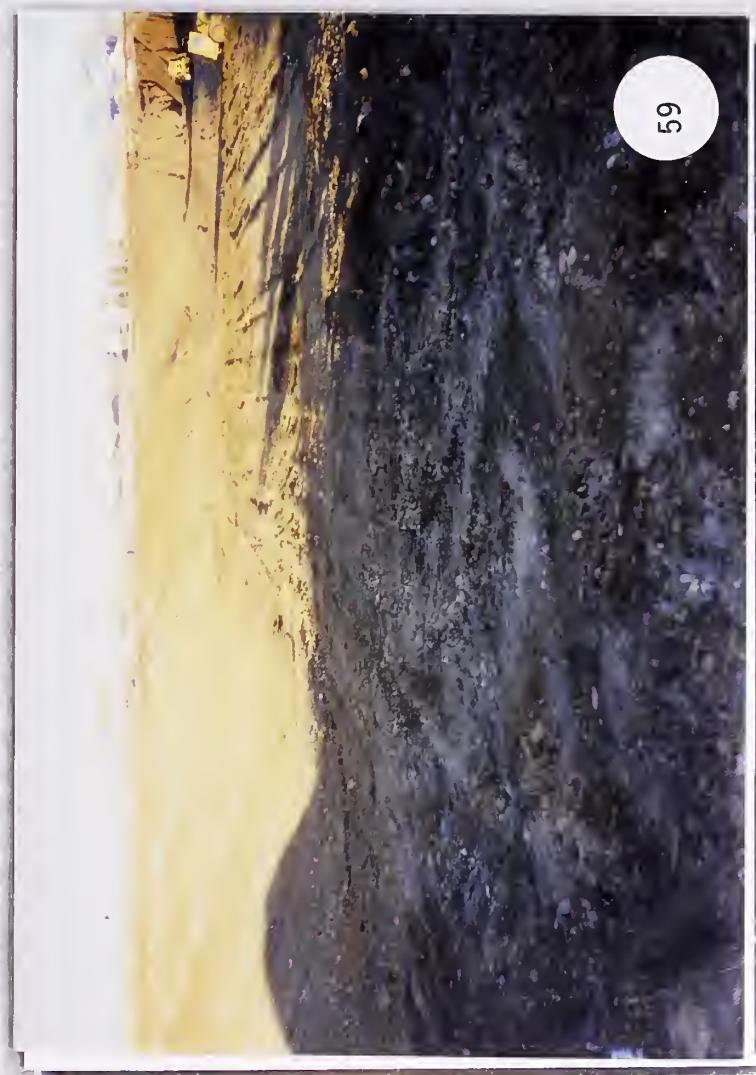
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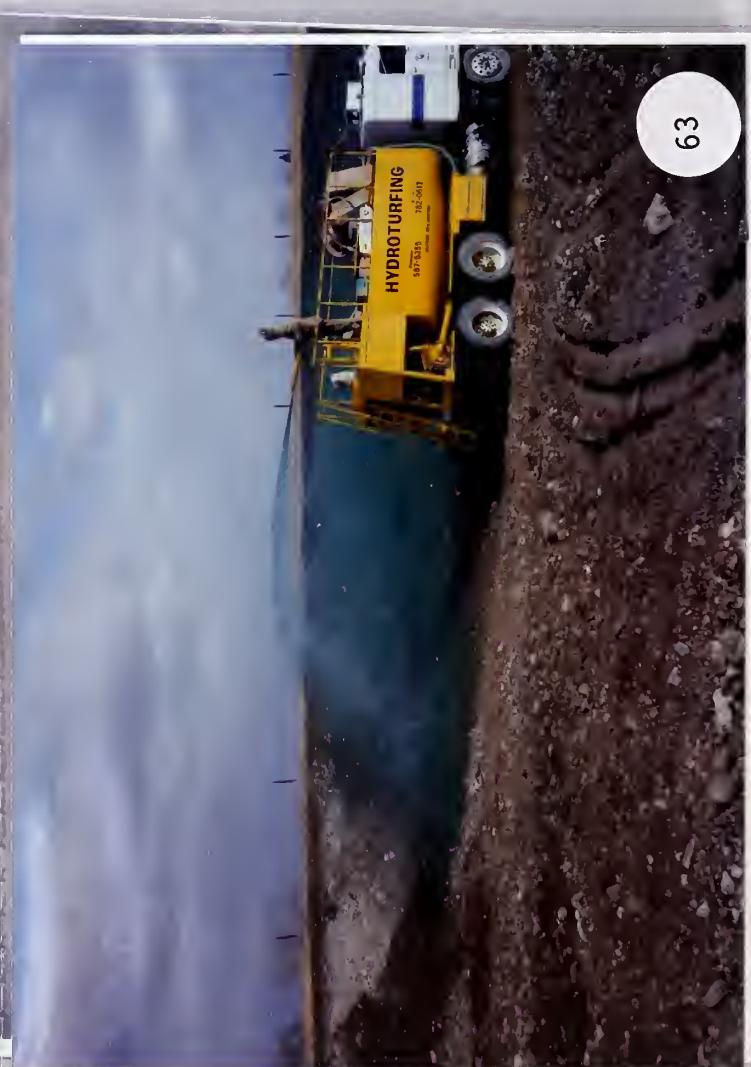
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61



63





Ro 11 III  
4 23

**GALLATIN GATEWAY GRAVEL PIT PROJECT**

DSL-AMRB 93-007

T3S, R4E, Section 2 in Gallatin County  
Gallatin Gateway USGS  $7\frac{1}{2}'$  quadrangle

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Ro 11 III  
4 25

**GALLATIN GATEWAY GRAVEL PIT PROJECT**

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